Touch screen controlled multipurpose spy robot using zigbee

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Abstract— This project controlled the robot system in a new economical solution and as well as it is used for different sophisticated robot application. The control system consists of Touch screen and Zigbee modules, a microcontroller that collects and controls the robot. Now Spying area in military ground where enemy stay can be took before taking any action. The Mini Spy Robot is small robot with a camera attached to it. The body of the robot consists of two wheels attached to geared motors. The motors will be run by the relays which will be then controlled through Touch screen via "ZIGBEE" device. Just by using a Zigbee enabled Touch screen, the user can control the SPY ROBOT from anywhere area.

Index Terms— Touch screen sensor, ZigBee and Intelligent robot.

I. INTRODUCTION

A complete solution of a robot control solution is presented in this project. This spy robot was fully controlled by the TOUCH SCREEN and the commands from the TOUCH SCREEN via Zigbee transmitter were received by the microcontroller. So This spy robot can be used in military applications. Most of the military organization now takes the help of robots to carry out many risky jobs that cannot be done by the soldier. These spy robots used in military are usually employed with the Integrated system including gripper and cameras, video screens, sensors. The military robots also have different shapes according to the purposes of each robot[2]. Here this system is proposed with the help of low power Zigbee wireless sensor network to trace out the intruders and the robot will take the necessary action automatically. Thus the proposed system, an Intelligent Robot using Zigbee saves human live and reduces manual

error in defense side. This is specially designed spy robotic system to save human life and protect the country from enemies. One of the most important things about these robots is that they have the capability to perform missions remotely in the field, without any actual danger to human lives[5].

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II. PROJECT OVERVIEW

The advent of new high-speed technology and the growing computer capacity provided realistic opportunity for new robot controls and realization of new methods of control theory.

This technical improvement together with the need for high performance robots created faster, more accurate and more intelligent robots using new robots control devices, new drives and advanced control algorithms.

An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main device used in embedded. Here In a robot section gas sensor senses the gas leakage. Metal detector used to detect bombs. A camera is a device that records images, either as a still photograph or as moving images known as videos. This is used in the robot to take the video surveillance of the area.

A. ZIGBEE IEEE802.15.4:

The zigbee communication is a communication technology to connect local wireless nodes and provides high stability and transfer rate due to data communication with low power. Based on IEEE 802.15.4 Low Rate-Wireless Personal Area Network standard, the Zigbee standard has been proposed *to* interconnect simple, low rate and battery powered wireless devices needs of low-cost, low-power, wireless sensor networks It can send data up to 30m and it has low power consumption (1mW for transmitting data). Xbee works in 2.4 GHz frequency and offers Application Programming three modes of operation; AT mode, following the command mode. Secondly, it can identify the source address of each
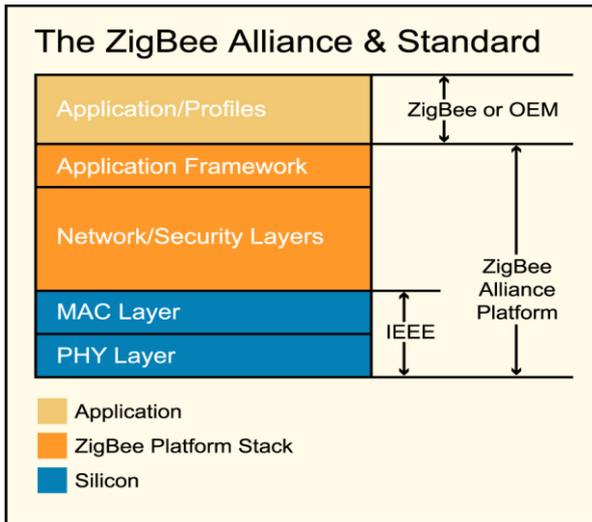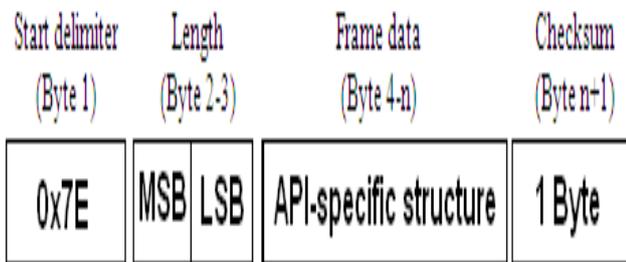
Figure 1: The ZigBee firmware model[1]

Figure 2: ZigBee Module API Data Frame

packet and thirdly, it will receive update on the transmission status whether it is successful or fail. The data frame for API operation is shown in figure 2. The frame is being divided.

B. TOUCHSCREEN SENSOR

Touch screen panel is composed of several layers, the most important of which are two thin, metallic, electrically conductive layers separated by a narrow gap. When an object, such as a finger, presses down on a point on the panel's outer surface the two metallic layers become connected at that point: the panel then behaves as a pair of voltage dividers with connected outputs.
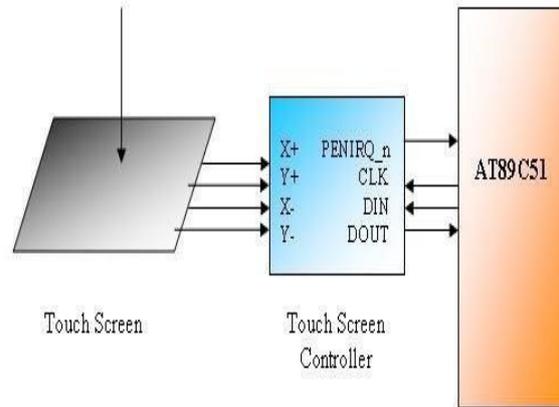

Figure 3: Interfacing between touch screen &micro controller

This causes a change in the electrical current which is registered as a touch event and sent to the controller for processing. ayers uniformly coated with a transparent resistive material and separated by an airgap. Electrodes placed along the edges of the layers provide a means for exciting and monitoring the touch screen.

C. L293D

L293D is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low current control signal and provide a higher current. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively. A four-wire resistive touch screen panel consists of two flexible.
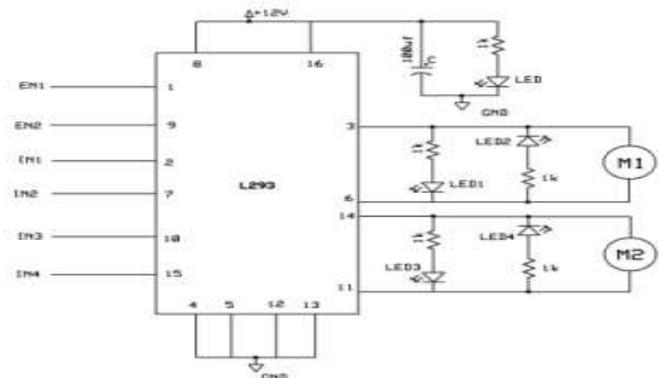

Figure 4: Motor Driver section

D. RS-232

RS-232 is simple, universal, well understood and supportive. The serial port transmits a '1' as -3 to -25 volts and a '0' as +3 to +25 volts. Devices which use serial cables for their communication are split into two categories. These are DCE (data communications equipment) and DTE (data terminal equipment.) Data communications equipment is devices such

as the modem, TA adapter, plotter etc while data terminal equipment is your computer or terminal.
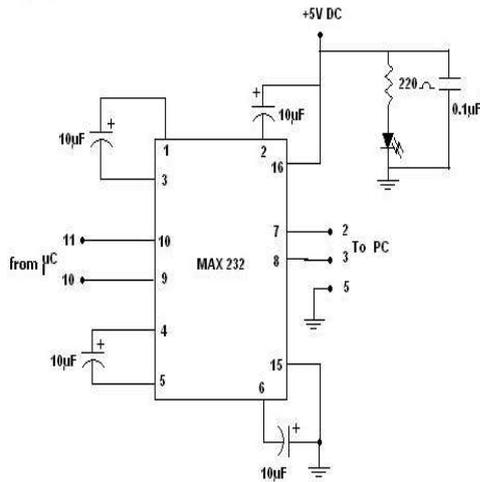

Figure 5: Circuit diagram of level converter Max232

III. METHODLOGY

The methodology of this project design can be divided into two sections; hardware and software implementations. The hardware implementation consists of the development of the Touch screen sensor, Zigbee and LCD and also use intelligent robot while the software implementation focuses on program of the microcontroller using Proteus 7(Embedded C).

A. Hardware Implementation

Microcontroller is a programmable device. A microcontroller has a CPU in addition to a fixed amount of RAM, ROM, I/O ports and a timer embedded all on a single chip. The fixed amount of on-chip ROM, RAM and number of I/O ports in microcontrollers makes them ideal for many applications in which cost and space are critical[6]. Here we use PIC18F452 and PIC18F452 for transmitting and receiving sections. Figure 2(a), 2(b) shows the operation of this Transmitter and receiver section system.
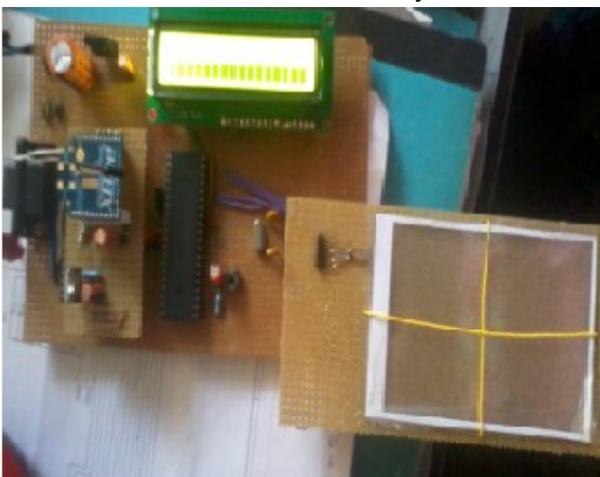

Figure III(a): Transmitter section

Figure III(b): Receiver section

In addition to this, bomb detection, bomb diffusion, gas leakage detection, live are included. In this, the robot can move through the rugged surfaces also. Video receiver receives the video signals from camera. There are three motor drivers are used in the robot section. They are the first two motor drivers are used to control the movement of the robot motor. The second motor driver is used to control for the Camera movement in robot. The 12V battery supply is given to the motors for moving the robot and also the supply is given to camera.
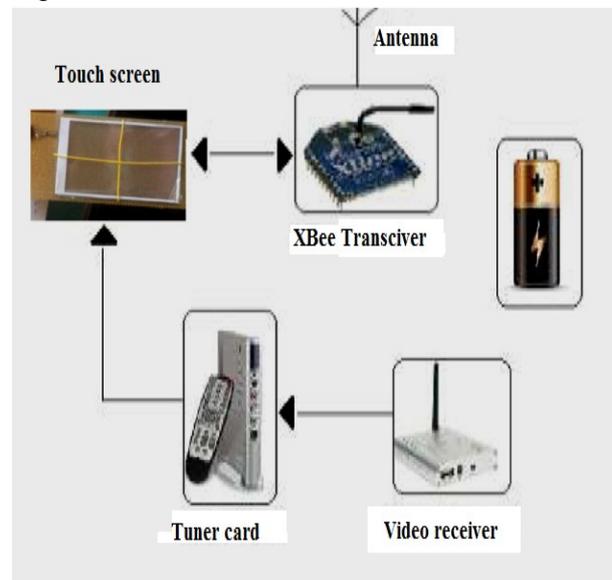

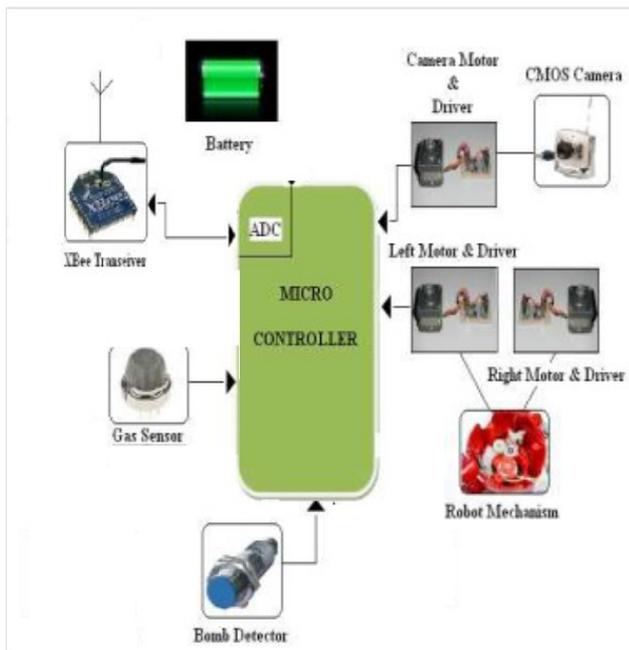Figure III(c) : Block diagram for transmitter section

Figure III(D) : Block diagram for transmitter section

B. Software Implementation

The software part consists of programming PIC16LF452 microcontroller using PIC C compiler. The scope of programming includes USART communication programming, LCD character module programming and analog to digital converter programming. All of this programming is done using C language. In proteus software we have used virtual terminal instead of zigbee and variable register instead if touch screen and finally transmitter section successfully run using LCD display.
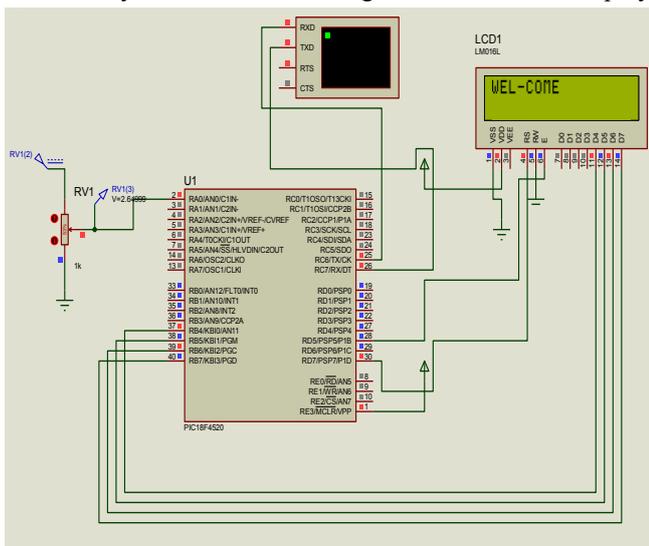

Figure III(e): Schematic Diagram of Transmitting Section

IV. SCOPE & APPLICATIONS

Used in Domestic and industrial applications Yes, it is also a very useful thing in day to day life. As we all are so much used to it that we need more and more improvements in it by which it can overcome the Only the imagination can limit the applications of the above proposed system.

Though the following are some examples…

- Robotic vision development,
- Exploration robots,
- Can be used for Industry application,
- Fire fighting robot,
- Various military applications,
- Gaming,

V. Conclusion

This proposed system gives an exposure to design a spy robot that can be used to do multifunction in defense. This proposed   design and implementation touch screen controlled spy robot by using ZigBee technology will be used to control the robot using the touch screen from certain rang of distance using the ZigBee based wireless communication multiple flying robot very easilyapplications and extensions. protocol by this method we can easily control the multiple flying robot very easily.

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